What is claimed is:

1. A medical device, comprising:

an elongate tubular member having a proximal end, a distal end, and a lumen therebetween; and

an elongate non–spherical balloon mounted on the distal end of the elongate tubular member and communicating with the lumen, the balloon having a compliance of approximately 0.3–1.25 mm per psi and configured such that it has an initial wrinkle–free diameter of approximately 10–15 mm, and thereafter expands upon inflation.

2. The medical device of claim 1, wherein the balloon is capable of approximately 150% increase in diameter upon inflation to 12–50 psi.

3. The medical device of claim 1, wherein the balloon is capable of expansion to approximately 25–30 mm in diameter upon inflation to approximately 12–50 psi.

4. The medical device of claim 1, wherein the balloon has an initial wrinkle–free diameter of approximately 10–15 mm at approximately 0.5–5 psi.

5. The medical device of claim 1, wherein the balloon has a tubular or sausage shape.

6. The medical device of claim 1, wherein the balloon is approximately 3–6 cm in length.

7. The medical device of claim 1, wherein the balloon is made of molded polyurethane.

8. A method for increasing cerebral blood flow, comprising the steps of:

providing an elongate tubular member having a proximal end, a distal end, a lumen therebetween, and an elongate non–spherical balloon mounted on the distal end of the elongate tubular member and communicating with the lumen, the balloon having a compliance of approximately 0.3–1.25 mm per psi and configured such that it has an initial wrinkle–free diameter of approximately 10–15 mm, and thereafter expands upon inflation;

inserting the elongate tubular member into the descending aorta;

locating the balloon downstream from the takeoff of the brachiocephalic artery; and

expanding the balloon to at least partially obstruct blood flow in the aorta.

9. The method of claim 8, further comprising the step of measuring cerebral blood flow before the step of expanding the balloon to at least partially obstruct blood flow in the aorta.

10. The method of claim 8, further comprising the step of measuring cerebral blood flow after the step of expanding the balloon to at least partially obstruct blood flow in the aorta.

11. The method of claim 10, further comprising the step of adjusting the expansion of the expandable member based on measured cerebral blood flow.